

# Generation of ARD for Automated Analysis

## Discussion

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# ARD Definition – 1<sup>st</sup> Collection for LCMAP

- Top of Atmosphere, Surface Reflectance and Brightness Temperature
- All bands except pan band
- Generated as a collection (traceable provenance)
- Quality band from Level-1

Bit	Value	Cumulative Sum	Description - OLI
0	1	1	Designated Fill
1	2	3	Terrain Occlusion
2	4	7	Radiometric Saturation
3	8	15	
4	16	31	
5	x32	63	Cloud Confidence
6	64	127	
7	128	255	Cloud Shadow
8	256	511	
9	512	1023	Snow/Ice
10	1024	2047	
11	2048	4095	Cirrus
12	4096	8191	
13	8192	16383	
14	16384	32767	
15	32786	65553	

Bit	Value	Cumulative Sum	Description – TM/ETM+
0	1	1	Designated Fill
1	2	3	Dropped Pixel
2	4	7	Radiometric Saturation
3	8	15	
4	16	31	
5	32	63	Cloud Confidence
6	64	127	
7	128	255	Cloud Shadow
8	256	511	
9	512	1023	Snow/Ice
10	1024	2047	
11	2048	4095	
12	4096	8191	
13	8192	16383	
14	16384	32767	
15	32786	65553	

# ARD Definition

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## ▪ Geometry

USGS Product Projection Parameters			
Projection: Albers Equal Area Conic			
Datum: North American Datum (NAD) 83			
	Conterminous U.S.	Alaska	Hawaii
First standard parallel	29.5°	55.0°	8.0
Second standard parallel	45.5°	65.0°	18.0
Longitude of central meridian	-96.0°	-154.0°	-157.0
Latitude of projection origin	23.0°	50.0°	3.0
False Easting	0.0	0.0	0.0
False Northing	0.0	0.0	0.0

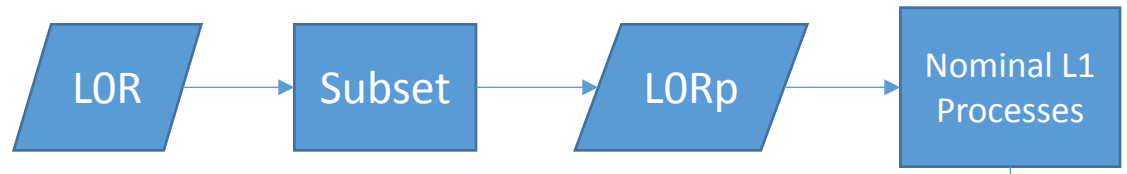


# ARD Inputs

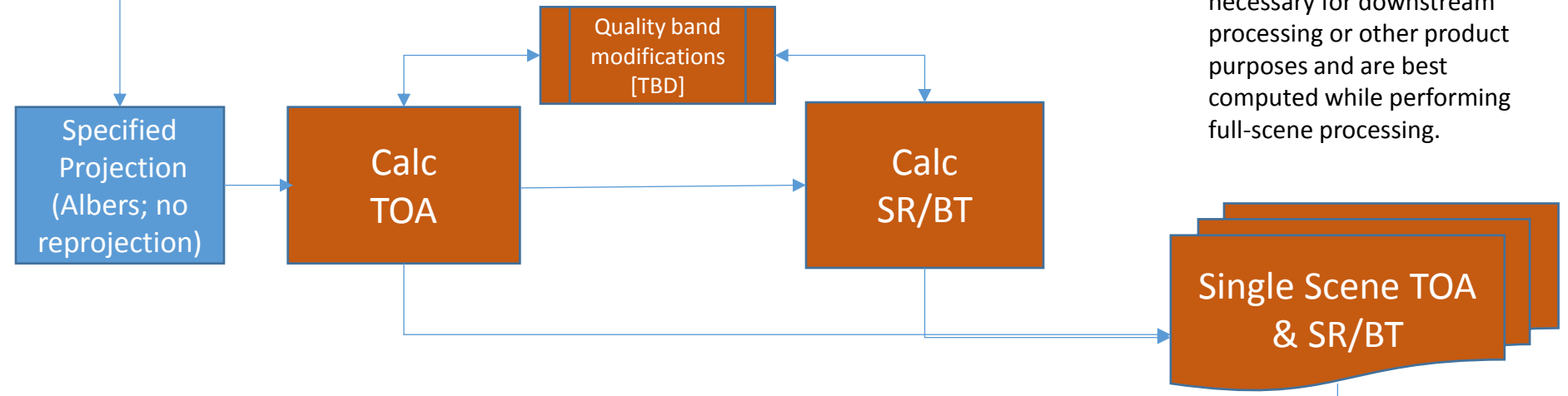
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- **Albers Level-1 Products for the U.S.; 1982 to present**
  - **TM/ETM+ Collection 1, Tier 1**
  - **OLI\_TIRS Collection 1, Tier 1, Tier 2 (?)**

Existing  
Collection 1  
Capabilities

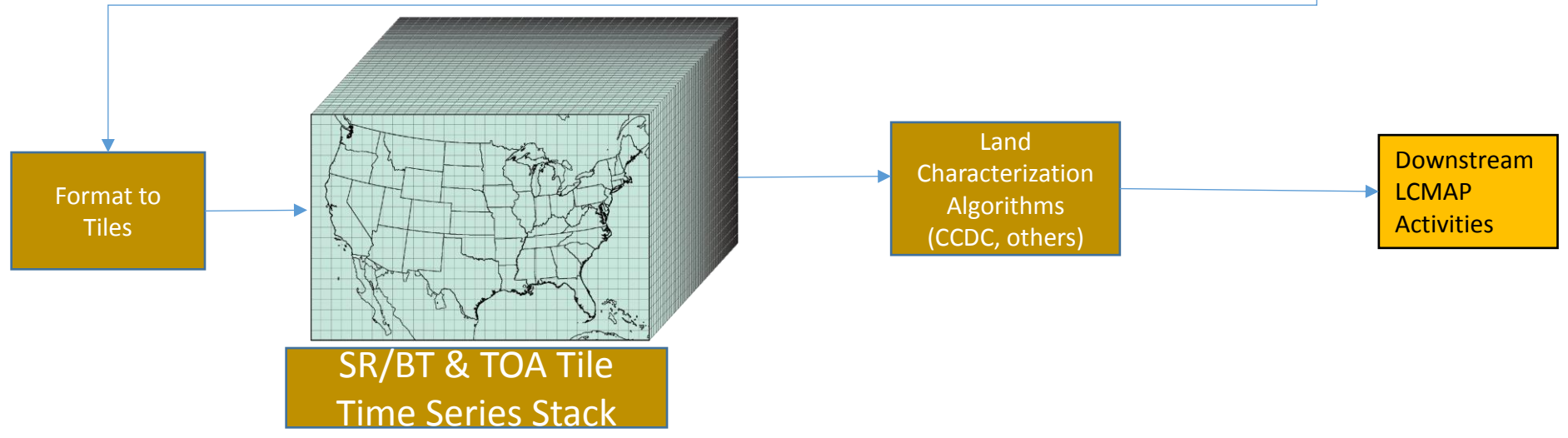


New Single Scene  
Processes



Single scene processes compute and carry forward the fmask, quality band, and other key derivatives that are necessary for downstream processing or other product purposes and are best computed while performing full-scene processing.

Tiling and Downstream  
Processes



# ARD for Automated Analysis NOTIONAL Schedule

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- **ARD Dependencies**

- Collection 1 Level-1
- Final SR Algorithms (TM/ETM+ & L8)
- ARD product specifications (in work)

- **TM/ETM+**

- Aug 8<sup>th</sup>: TM/ETM+ Level-1 collection production starts ; Albers L1 is produced for U.S. data along with UTM
- Mid-Nov: produce SR for all Level-1 Albers scenes
- Daily tiles will be assembled after SR scenes are produced for that day
- Once process starts, it will be continued for forward processed scenes

- **OLI\_TIRS**

- Process will begin when Level-1 collection production starts (Dec)



# Discussion

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- **Thought - Initial rollout is provisional until validated**
- **How many members of the science team would like access to this product?**
- **Request for additional services (band/spatial subsetting, pixel time series, various formats, etc)?**